THE OCCURENCE OF RESIDUAL ORGANOCHLORINE AND ORGANOPHOSPHORUS PESTICIDES IN THE AGRICULTURAL REGION OF TALTIZAPÁN, MORELOS IN MÉXICO

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Background and Aims: The presence of residual organochlorine and organophosphorus pesticides in agricultural soil and water samples from Tlaltizapan, state of Morelos, México at different periods of the sugar cane cultivation cycle was evaluated.
Methods: There were performed three monitoring of soil and water samples within an area of approximately of 63 Km ², the sampling were conducted in November 2208, November 2009 and April 2010.
Results The metabolite p,p´-DDE, γ-HCH, p,p-DDD and heptachlor were found in more of 95% of the sampling zones in the three monitoring performed along 2 years. The highest concentration detected (129.6 µg kg-1dry soil) was for α-HCH but its frequency of detection was ~5%. The low-detection frequency of α-HCH and the high-concentration values of γ-HCH indicate the repeated use of technical-grade HCH and Lindane (γ-HCH) in the region. Among the organophosphorus pesticides, the ethyl parathion was the compound with the highest soil concentration, ~2000 µg kg-1dry soil in first monitoring. However, this compound was detected in the second monitoring in a concentration of ~4 µg kg-1dry soil and it was not detected in the third one, indicating that is not accumulated in the environment. The heptachlor was the compound most commonly found in all water samples, in a range of 0.45-1.25 ng L-1.
Conclusions: The presence of this organochlorine compound in water samples indicates a possible migration from soil to water bodies due to soil erosion. There was not detected the presence of organophosphorus compounds in water samples; this can be attributed to the moderate persistence of these compounds and their consequent degradation before arriving the water bodies.